



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/882,290	06/14/2001	Masahiro Ishida	KPO127	6869
25271	7590	04/04/2006	EXAMINER	
GALLAGHER & LATHROP, A PROFESSIONAL CORPORATION			VLAHOS, SOPHIA	
601 CALIFORNIA ST			ART UNIT	PAPER NUMBER
SUITE 1111			2611	
SAN FRANCISCO, CA 94108				

DATE MAILED: 04/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/882,290

Applicant(s)

ISHIDA ET AL.

Examiner

SOPHIA VLAHOS

Art Unit

2637

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 11-13, 18-20 and 28-30 is/are rejected.
- 7) ☒ Claim(s) 6-10, 14-16, 21-27 and 31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see "REMARKS" page 12 section "No Motivation to Combine", filed 12/30/2005, with respect to the rejection(s) of claim(s) 1, 17 under U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Kuyel (U.S. 2002/0103609).

Drawings

2. The drawings were received on 12/30/2005. These drawings are accepted by the Examiner.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuyel (U.S. 2002/0103609)

With respect to claim 1, Kuyel discloses: disclose an error estimator for obtaining errors between the approximated zero-crossing points and the corresponding zero-crossing points of the signal under measurement (see Fig. 5A, variance measurement set 508, paragraph [0043]), and for outputting as a zero crossing error

data sequence (paragraph [0043] – variance at maximum slew rate point, for example data set 508); and a jitter estimator for obtaining a jitter sequence of the signal under measurement from the zero-crossing error data sequence (paragraph [0039] equations (6), (7), overall jitter formula).

Kuyel does not expressly teach: the error estimator is a phase error estimator, obtaining phase errors between the approximated zero-crossing points and the corresponding zero-crossing points of the signal under measurement, and for outputting as a zero crossing phase error data sequence and a zero-crossing time interval sequence between the approximated zero-crossing points; the jitter estimator is a period jitter estimator for obtaining a period jitter sequence of the signal under measurement from the zero-crossing phase error data sequence, the zero crossing time interval sequence and a fundamental period of the signal under measurement.

Although not expressly taught by Kuyel, the errors between the approximated zero-crossing points and the corresponding zero-crossing points of the signal under measurement, can be either expressed as time or phase errors -and conversion from/to time and phase units in sine waves is equally obvious to a person of ordinary skill in the art at the time of the invention, resulting into a zero crossing phase error data sequence.

Kuyel computes overall jitter and can easily compute period jitter- defined as the difference between the ideal period and the measured period. Therefore period jitter can be expressed as: $J_{period} = T_o \pm T_{error}$ where T_o is the fundamental period of the signal, and T_{error} is time difference (error) caused by jitter and can be computed by equation (7)

of Kuyel. Finally, the plus or minus sign of the above equation can be determined by a zero crossing time between approximated zero crossing points.

With respect to claim 17, method claim 17 is analyzed similarly to apparatus claim 1.

5. Claims 2-5, 11-13, 18-20, 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuyel (U.S. 2002/0103609) as applied to claim 1, and further view of Mitarai (U.S. 3,995,222).

With respect to claim 2, all of the limitations of claim 2 are analyzed above in claim 1, except for: further comprising band-pass filter means provided at front stage of said phase error estimator to which the signal under measurement is inputted for passing therethrough predetermined frequency components of the signal under measurement, and for supplying the predetermined frequency components to said phase error estimator.

In the same field of endeavor, however, Mitarai discloses band-pass filter means (as part of the sine wave generator)(Fig. 3, element 11, column 2, lines 54, 66-67, column 3, lines 1-2) passing therethrough predetermined frequency components of the signal under measurement, and for supplying the predetermined frequency components.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to modify Kuyel by using the sine wave generator with BPF of Mitarai since the system of Mitarai reduces harmonic distortion (column 1, lines 29-33).

With respect to claim 3, all of the limitations of claim 3, are analyzed above in claim 2, but Kuyel does not teach: a cycle-to-cycle period jitter estimator to which the period jitter sequence is inputted for calculating its difference sequence, and for outputting a cycle-to-cycle period jitter sequence. However, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the period jitter sequences of Kuyel to compute cycle-cycle jitter.

With respect to claim 4, all of the limitations of claim 4, are analyzed above in claim 2, and Kuyel discloses: a jitter detector (Fig. 4, processor 416) to which the jitter sequence is inputted for obtaining a jitter value of the signal under measurement from the jitter sequence.

With respect to claim 5, all of the limitations of claim 5, are analyzed above in claim 2.

With respect to claim 11, all of the limitations of claim 11, are analyzed above in claim 4, except for: the jitter detector is a peak-to-peak detector for obtaining a difference between the maximum value and the minimum value of a supplied jitter

sequence. However, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to calculate a peak-to-peak jitter value since peak-to-peak jitter is commonly to express jitter.

With respect to claim 12, all of the limitations of claim 12, are analyzed above in claim 4, except for: the jitter detector is an RMS detector for obtaining a too-mean-square value (RMS value) of a supplied jitter sequence. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to compute the RMS jitter – standard deviation of peak-to-peak jitter- since RMS jitter is also commonly used to express jitter.

With respect to claim 13, all the limitations of claim 13 are analyzed in claim 4, and Kuyel discloses a jitter detector is a histogram estimator for obtaining a histogram of a supplied jitter sequence (paragraph [0029] last sentence).

Method claims 18-20, 28-30 are analyzed similarly to corresponding apparatus claims 2-5, 11-13.

Allowable Subject Matter

6. Claims 6-10, 14-16, 21-27, 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SOPHIA VLAHOS whose telephone number is 571 272 5507. The examiner can normally be reached on MTWRF 8:30-17:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammed Ghayour can be reached on 571 272 3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SV
3/27/2006


MOHAMMED GHAYOUR
SUPERVISORY PATENT EXAMINER